

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	RM-10867
	)	
AMENDMENT OF PART 97 OF THE	)	
COMMISSION'S RULES GOVERNING THE	)	
AMATEUR RADIO SERVICE TO	)	
IMPLEMENT CHANGES TO ARTICLE 25	)	
OF THE INTERNATIONAL RADIO	)	
REGULATIONS ADOPTED AT THE 2003	)	
WORLD RADIOCOMMUNICATION	)	
CONFERENCE	)	

TO: The Chief, Wireless Telecommunications Bureau

**COMMENTS OF JOHN B. JOHNSTON**

THIS COMMENTER

1. These are the comments of John B. Johnston ("this commenter"), a Commission-licensed amateur operator of over fifty years, an Amateur Extra Class licensee for forty years, and the amateur station license grantee of W3BE. Additionally, this commenter is a volunteer examiner ("VE"), a volunteer license examination preparation instructor, a member of the National Conference Volunteer Examiner Coordinators' ("VECs") Question Pool Committee, a designated Elmer<sup>1</sup> for a local amateur radio club, and the author of numerous columns published in the amateur service print media answering readers' questions about the Commission's rules for the amateur service. As such, this commenter has great interest in the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

INTRODUCTION

2. The subject petition proposes drastic changes to our amateur service rules. Among these, the petition would have the Commission upgrade in operator license class -- without passing the required examinations -- some 434,595 operators<sup>2</sup> who have not qualified for such an upgrading. This commenter, convinced that such a move would be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community, recommends this aspect of the petition be dismissed and offers an alternative plan that would avoid the shortcomings of the petition.

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<sup>1</sup> "Elmer" is a term for an operator who helps others resolve day-to-day technical and operating issues encountered in the amateur service community.

<sup>2</sup> Amateur Call Sign Statistics March 27, 2004. Includes current and expired, but within grace period for renewal, listings: 84,563 Advanced, 67, 532 Tech Plus and 282,500 Technician operators.

### PETITION'S PLAN COULD DISRUPT OUR VEC SYSTEM

3. A Commission proceeding proposing to implement the petition's plan could drive a wedge within our amateur service community. It would pit those who would benefit from an upgrade in operator class without examination against those who have expended the effort to pass the examinations. It would put on the spot those holding our administrative and leadership posts; they would be forced into choosing one side or the other, with no hope for a win-win outcome. It would be a very contentious proceeding that would evoke a large outpouring of comments that would require many work-years of Commission staff time simply to read and evaluate. With the possibility of a no-examination upgrade, few of our Novice, Technician, Tech Plus and Advanced Class licensees would choose to upgrade via our examinations. They would, instead, elect to await the outcome of the Commission's decision-making process. There could be several years of low activity for in VEC system. Our training courses could dwindle and self-training could suffer. To follow such a course of action would be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

### TELEGRAPHY SKILL IS THE ISSUE

4. The subject petition proposes rule amendments that "...**would implement changes to the International Radio Regulations adopted at the 2003 World Radio Conference in Geneva, Switzerland (WRC-03) with regard to qualifications for an amateur License.**"<sup>3</sup> The changes to the international Radio Regulations include broad guidelines for the verification of the operational and technical qualifications of any person wishing to operate an amateur station.<sup>4</sup> These guidelines, however, are not at odds with our operator examination element standards.<sup>5</sup> The significant change was, in fact, to release government administrations from the telegraphy skill requirement for an amateur operator license.<sup>6</sup> The Commission can do with our telegraphy requirement as it determines is proper in our United States without concern for violating an international agreement. Currently, only our entry-level operator license class does not require telegraphy skill.<sup>7</sup> The petition calls for the elimination of this telegraphy requirement also for our middle grade operator license, but would retain it for our expert level.<sup>8</sup>

5. Until our first no-code-test operator license class on February 14, 1991, telegraph skill subjugated all other prerequisite qualifications for an amateur operator license. It is understandable, therefore, that the prospect of any further de-emphasis on telegraphy is bringing on withdrawal pains to the veteran segment of our amateur service community. Within this most experienced and knowledgeable group, there is an unshakable conviction in the value of

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<sup>3</sup> Petition at undesignated paragraph on page 1.

<sup>4</sup> Petition at ¶5.

<sup>5</sup> 47 C.F.R §97.503(b) of the Commission's Rules states that "A written examination must be such as to prove that the examinee possesses the operational and technical qualifications required to perform properly the duties of an amateur service licensee."

<sup>6</sup> Petition at ¶4.

<sup>7</sup> C.F.R §97.501(a) and (b).

<sup>8</sup> Petition at ¶18.

telegraphy skill. It is imperative, therefore, that their concerns are taken very seriously in the interest of the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

#### PETITION'S PLAN FOR THE 21<sup>ST</sup> CENTURY

6. Recognizing the limitations of our current structure and unencumbered now by a proof-of-telegraphy skill obligation internationally, the petition offers up a plan for an operator structure looking forward to the next ten to fifteen years.<sup>9</sup> This commenter agrees with the petition that it is timely to consider the issue of a structure appropriate for the 21<sup>st</sup> Century. The petition approaches this task by tinkering with our existing structure. That structure, however, evolved during the 20<sup>th</sup> Century when telegraphy was the major emphasis. The petition's approach is comparable to trying to construct a futuristic hypersonic aero vehicle by rearranging vintage components scavenged from a much-modified 1950 era airplane. The results from either endeavor are predictable: It won't fly as intended. The petition notes that our amateur service operator class license structure has been revised from time-to-time throughout the 20<sup>th</sup> Century.<sup>10</sup> Tinkering with our operator class structure, to accommodate this or that or the other, is a popular pastime within our amateur service. In paragraph 17, below, this commenter suggests a solution to help curb our obsession for this type of activity.

#### UNEARNED ADVANCED CLASS UPGRADE ARE UNWARRANTED

7. This commenter takes issue with the petition's plan that would have the Commission upgrade our 84,563 Advanced Class operators to Amateur Extra Class without proving to our amateur service community that they are qualified to hold this -- our most prestigious class of operator license.<sup>11</sup> To adopt this proposal would be highly unfair to our most dedicated and most highly qualified 107,313 Amateur Extra Class operators who have expended the time and effort to master the necessary qualifications. By climbing to the top, step-by-step, they have demonstrated their unqualified support for the objectives of our amateur service in our United States.<sup>12</sup> Our Advanced Class operators -- for whatever reasons -- have stopped short of the top rung of our ladder. To implement any such plan would diminish the reputation for excellence associated with our expert class. It would incur the disapproval of the very amateur operators who have so faithfully passed all of our examinations. It would, therefore, be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community. This commenter, therefore, asks respectfully for the Commission to dismiss this aspect of the proposal.<sup>13</sup>

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<sup>9</sup> Petition at ¶13.

<sup>10</sup> Petition at ¶1.

<sup>11</sup> Petition at ¶17.

<sup>12</sup> 47 C.F.R. §97.1 Basis and purpose states the rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the principle of (c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

<sup>13</sup> The petition does not raise the issue of restoring privileges lost on November 22, 1968, in the Report and Order in Docket No. 15928. That issue is also not addressed herein.

### ADVANCED CLASS OPERATORS MAY UPGRADE TODAY BY EXAMINATION

8. Today, any and all of our Advanced Class operators may upgrade to our expert class without changes to our rules. An Advanced Class operator has only to answer correctly 37 out of a unique set of 50 questions concerning the privileges of our Amateur Extra Class.<sup>14</sup> The examination will utilize questions from our Element 4 question pool.<sup>15</sup> Our pool is maintained through a cooperative effort among our fourteen VECs and is in the public domain.<sup>16</sup> An Amateur Extra Class VE has prepared each question in our pool.<sup>17</sup> It is, therefore, the definitive statement by our experts as to what a successful examinee for our top class license needs to know. Our VEs stand ready to administer this examination to any Advanced Class operator, practically anywhere, at any time.

9. The Commission has wisely closed our Advanced Class to newcomers.<sup>18</sup> Our existing Advanced Class operators are free to work toward passing the examination necessary to attaining an Amateur Extra Class operator license, or they may choose to stay indefinitely at our next-to-top-level. There is no legitimate reason for the Commission to abandon this highly accommodating arrangement. For these reasons, this commenter takes strong issue with the petition's plan to promote our Advanced Class operators to our highest level of excellence without passing our requisite examination. The Commission is urged to stay the course and keep faith with those who have demonstrated to our VEs that they are qualified to hold our most prestigious highest class of operator license. This commenter, therefore, asks respectfully for the Commission to dismiss this aspect of the proposal.

### UNEARNED TECHNICIAN CLASS UPGRADE ARE UNWARRANTED

10. This commenter also takes issue with the petition's plan for the Commission to upgrade our 282,500 Technician and our 67,532 Tech Plus operators, without examination, to General Class.<sup>19</sup> In effect, our present 146,164 General Class operators -- all of whom have qualified by examination for the privileges of that operator license class -- would suddenly find their stations sharing their privileges with some 350,032 operators, none of whom have similarly qualified. Today, for a Technician or Tech Plus Class operator to upgrade to our General Class, the person has to answer correctly 26 out of a unique set of 35 questions concerning the privileges of our General Class operators.<sup>20</sup> Each examination utilizes questions taken from our Element 3 question pool.<sup>21</sup> Our pool is also maintained through a cooperative effort among our VECs and is in the public domain. An Amateur Extra or Advanced Class VE has prepared each question in this pool.<sup>22</sup> It is, therefore, the definitive statement by our knowledgeable operators as to what a successful examinee for our General Class operator license needs to know. Our VEs

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<sup>14</sup> 47 C.F.R. § 97.503(b)(3).

<sup>15</sup> 47 C.F.R. §97.507(b)

<sup>16</sup> Our question pools also contain the correct answer to each question as well as the multiple-choice distracters.

<sup>17</sup> 47 C.F.R. §97.525.

<sup>18</sup> 47 C.F.R. §97.17. Our Novice, Technician and Advanced Classes are presently so closed.

<sup>19</sup> Petition at ¶18.

<sup>20</sup> 47 C.F.R. § 97.503(b)(2).

<sup>21</sup> 47 C.F.R. §97.507(b)

<sup>22</sup> 47 C.F.R. §97.523.

stand ready to administer this examination to any and all of our Technician and Tech Plus Class operators. There are training manuals and courses available to those who need assistance.

11. Moreover, for the Commission to order an exemption to our Element 3 General Class examination for our 350,032 Technician and Tech Plus operators would sully our reputation for excellence. After all, the Commission would have excused from our examination over 70% of our General Class licensees. More than two operators out of three, therefore, would be unqualified for their privileges. Such an indefensible situation would be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community. This commenter, therefore, asks respectfully for the Commission to also dismiss this aspect of the proposal.

#### UNEARNED NOVICE PRIVILEGES ARE UNWARRANTED

12. Further, this commenter takes issue with the petition's plan for the Commission to award significant additional operating privileges for which they have not qualified to our 38,918 Novice licensees.<sup>23</sup> This class of license is a leftover from the telegraphy-dominated 20<sup>th</sup> Century, when it was our entry level. Our current licensees are, for some reason, unable or unwilling to master the knowledge necessary to qualify even for our current entry class of license. To do so, the person has to answer correctly 26 out of a unique set of 35 questions concerning the privileges of our Technician Class operators.<sup>24</sup> Each question set utilizes questions taken from our Element 2 question pool.<sup>25</sup> Our pool is also maintained through a cooperative effort among our VECs and is in the public domain. An Amateur Extra, Advanced or General Class VE has prepared each question in our pool.<sup>26</sup> It is, therefore, the definitive statement by our amateur service community as to the minimum knowledge a person must have in order to be granted an amateur service operator license. There are training manuals and courses available to those who need assistance. Our present Novices are, apparently, satisfied with their present privileges. The Commission has wisely closed our Novice Class to newcomers.<sup>27</sup> It should remain closed. For the Commission to reopen this class and authorize unearned privileges would be detrimental to our future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community. This commenter, therefore, asks respectfully for the Commission to also dismiss this aspect of the proposal.

#### CLASS-FREQUENCY SUB-BANDS ARE NOT EFFECTIVE

13. Finally, this commenter takes issue with the petition's request to once again tinker with our frequency sub-bands.<sup>28</sup> Our frequency sub-bands are the classic example of well-intentioned, but ineffective, rules taking on a life of their own. All operator frequency authorizations should be as complete bands. Only in this manner would the notion of spectrum rewards as an upgrading motivator have a chance of working effectively. Too many hams seem to have the attitude, "I like my call sign. There's no need to upgrade just for a few more

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<sup>23</sup> Petition at ¶18.

<sup>24</sup> 47 C.F.R. § 97.503(b)(1).

<sup>25</sup> 47 C.F.R. §97.507(b)

<sup>26</sup> 47 C.F.R. §97.523.

<sup>27</sup> Ibid.

<sup>28</sup> Petition at ¶22.

frequencies.” That should tell us something. It is the Commission’s class-distinctive sequential call sign system that is the upgrading motivational tool that works. Slicing up a frequency band by license classes seems to provide little, if any, significant motivation for upgrading to those who need motivation beyond the personal satisfaction of having attained our expert level of excellence. A segregated frequency sub-band scheme clearly increases the monitoring and enforcement workloads and isolates those whose self-training progress would benefit most from over-the-air communication with those having the expertise of the higher operator classes. It would, therefore, be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community. This commenter, therefore, asks respectfully for the Commission to also dismiss this aspect of the proposal.

#### A STRUCTURE FOR THE 21<sup>ST</sup> CENTURY

14. To tinker with our current structure as the petition recommends would break faith with those operators now in our amateur service community who have most fully supported our basis and purpose for our amateur service in these United States.<sup>29</sup> The foreseeable future needs of our amateur service operator class structure deserves to be addressed thoughtfully through a cooperative, objective search for a structure that appears best suited for the 21<sup>st</sup> Century, unencumbered with compromises to accommodate skeletons from our past. This commenter, therefore, suggests an alternative implementation plan that would avoid the pitfalls of the petition’s proposed revisions to our 20<sup>th</sup> Century structure.

#### THREE-STEP STRUCTURE IS APPROPRIATE

15. The extensive privileges of our expert Amateur Extra Class make it exceedingly difficult -- even for technically inclined persons -- to acquire the necessary technical knowledge and operating skills necessary to operate an amateur station properly while exercising those privileges. To pass our examination for our expert class requires excellence across a broad range of practical electronics and communications technologies. For many, hands-on experience provides the best training. It is altogether necessary and proper, therefore, that there be a structure of operator license classes for one to use as manageable steps toward reaching our ultimate goal. The petition calls for a three-step structure.<sup>30</sup> This commenter has no objection to any such structure as long as it is carefully designed to encourage technically inclined persons to become an integral part of our amateur service community and thereafter enjoy a life-long learning experience participating in our hobby of electronics and communications. Rather than viewing each class of operator license as an end in itself, therefore, each class should be considered one step on the ladder intended to assist in the climb to our expert class. In a three-step structure, therefore, the first step would be for the beginner and the second step for the intermediate operator.

16. Our new, three-step structure more suited to the 21<sup>st</sup> Century should be overlaid on our current structure. Both structures would continue until such time as our old structure vanishes through natural causes. This approach eliminates any need for disturbing our current licensees. Further, it avoids the need to revise the current database with unwarranted upgrades and the issuance of nearly one-half-million modified license documents. Our Technician and

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<sup>29</sup> Ibid.

<sup>30</sup> Petition at ¶18.

General Classes, however, should also be closed to further entry. Only renewals and administrative update modifications should be permitted. It is this commenter's view that the privileges of our present Technician, Tech Plus, General, Advanced or Amateur Extra Class are far too extensive to serve us well as either as our beginner or as our intermediate step. The differences in privileges between Technician, General, Advanced and Amateur Extra are practically indistinguishable to most disinterested observers. Our Technician Class some has 90%, Our General Class 98% and Our Advanced Class 99% of the full-privileges of our Amateur Extra class. To those in our amateur service community who expended the effort to earn those small additional privileges, however, those small differences have enormous meaning.

#### NAMES OF NEW OPERATOR CLASSES

17. For our new 21<sup>st</sup> Century structure, our two new classes of operator license would merge with our present expert Amateur Extra Class in making up our new three-step structure. To avoid any misunderstanding of its intended purpose, this commenter recommends the name of our entry-level operator class be crafted along the line of the widely understood concept of an automobile driver learner permit or an aviation student pilot license. This commenter believes that the beginning of understanding begins with calling such things by their right names: Our entry-level step, therefore, should be called "Learner Operator Class" and our intermediate step should be called "Intermediate Operator Class." These names would help reinforce the concept that these classes of operator license are intended as steps for the purpose of acquiring practical, hands-on self-training so that the holder may progress up the ladder toward our expert Amateur Extra Class.

#### PURPOSES OF OPERATOR CLASSES

18. To establish the nature of its associated privileges, it is imperative that there be a common understanding of the purpose of each operator class. Because this has been absent, our urge to tinker with our operator structure goes on unchecked. To bring order to this matter, this commenter recommends a goal for our new structure; it should be the encouragement of technically-inclined persons interested in radio technique solely with a personal aim and without pecuniary interest, to (1) become established as a member of our amateur service community and to (2) engage in a rewarding learning experience of self-training, intercommunication and technical investigations. Further, our purpose of our three operator classes should be:

- **Our Learner Class should provide an opportunity for our operators with minimum technical and operating skills and knowledge to become proficient in operating properly a basic amateur station.**
- **Our Intermediate Class should provide an opportunity for our operators with the skills and knowledge of the Learner Class to become proficient in operating properly a moderately complex amateur station.**
- **Our Amateur Extra Class should provide an opportunity for our expert operators to become acknowledged as**

**being qualified to operate properly a complex high power amateur station under all likely conditions.**

#### LEARNER AND INTERMEDIATE OPERATOR PRIVILEGES

19. There is no valid reason to change the privileges of our expert Amateur Extra Class: all eleven special operations; all nine emission types; full 1,500 watts transmitter power; and all 28 frequency bands. Our purpose for our new Intermediate Class can be achieved with about half of our available special operations; half of our emission types; no more transmitter power than our RF environmental evaluation threshold; and access to about three HF bands (10-, 12- and 15-m), three VHF bands (2- and 6-m) and two UHF bands (33- and 70-cm).

20. Our purpose for our Learner Class, however, does not comport with engaging in any type of special operations. Becoming acquainted with our basic station operation standards codified in our Commission's Rules should be challenging enough.<sup>31</sup> Our technical standards should be our traditional Phone and CW emission types; 50 watts transmitter power; and access to our HF 10- and 12-meter bands and our VHF 2- and 6-meter bands.

#### AN EXPERT AMATEUR OPERATOR KNOWS MORSE CODE

21. This commenter agrees absolutely that our expert Amateur Extra Class examinees must prove at least a minimal degree of proficiency in telegraphy.<sup>32</sup> Telegraphy is our emission type of choice for many of our activities. A "telegraphy-challenged amateur service expert" would be an oxymoron, indeed! Our purpose for our Amateur Extra Class -- to become acknowledged as being qualified to operate properly a complex high power amateur station under all likely conditions -- would be best served by retention of a proof-of-telegraphy skill requirement. This course of action would be helpful to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

#### CURRENT TELEGRAPHY TEST IS INACCURATE AND UNFAIR

22. Our current five-minute test,<sup>33</sup> however, is not an accurate or fair way to prove that an examinee can send and receive telegraphy messages. It is holdover from the 20<sup>th</sup> Century when telegraphy skill had to be proven before an examinee could even take our written examination for an amateur service license. Our only way to accomplish this was by via a closed-circuit simulation. Here again, we have an example of rules taking on a life of their own. Our telegraphy message simulation standards have been compromised over the years to accommodate administrative pressures. Our VECs, understandably, have put the Commission on notice that they do not want to administer our telegraphy examinations.<sup>34</sup>

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<sup>31</sup> 47 C.F.R. §§ 97.101 through 97.121.

<sup>32</sup> Petition at ¶18.

<sup>33</sup> 47 C.F.R. §97.507(d).

<sup>34</sup> RM-10787.



### A REALISTIC TELEGRAPHY SKILL REQUIREMENT

23. Our Learner and Intermediate Operator Classes can be authorized safely to use telegraphy without a proof-of-skill examination.<sup>35</sup> Actually sending by hand and receiving by ear telegraphy messages sent over-the-air is our best possible proof that one can send by hand and receive by ear telegraphy messages sent over-the-air. Each time an operator engages successfully in a telegraphy communication, that operator is demonstrating the ability to do so. This commenter, therefore, requests that our examination requirements for our Amateur Extra Class license<sup>36</sup> be amended to authorize our VEs to rely on written confirmation that an examinee has successfully completed two-way radio message exchanges by telegraphy. There is in place a long-standing system administered within our amateur service community for providing such confirmation. This course of action would be helpful to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

### KEEP FAITH WITH OUR MOST EXPERT OPERATORS

24. To tinker with our current structure as the petition recommends would break faith with those operators now in our amateur service community who have most fully supported our basis and purpose for our amateur service in these United States.<sup>37</sup> The foreseeable future needs of our amateur service operator class structure deserves to be addressed thoughtfully through a cooperative, objective search for a structure that appears best suited for the 21<sup>st</sup> Century, unencumbered with compromises to accommodate skeletons from our past. To do otherwise could be detrimental to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

### SUMMARY

25. To this end, the Commission is urged to consider this commenter's alternative plan, outlined in the following and detailed in the attached Appendix.

- **Do not tinker with our current operator class structure.**
- **Add our Technician and General Classes to the list of classes in 47 C.F.R. §97.17(a) for which no new license will be issued.**
- **Do not upgrade to our higher operators classes anyone who does not pass our qualifying examinations.**
- **Establish a new operator class structure for the 21<sup>st</sup> Century: Learner, Intermediate and Amateur Extra Class.**

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<sup>35</sup> 47 C.F.R. §97.305(a) currently authorizes amateur stations having one of our no-code Technician Class operators to transmit a CW emission (telegraphy) on any frequency authorized to that class.

<sup>36</sup> 47 C.F.R. §97.507(c) and (d).

<sup>37</sup> Ibid.

- **Codify in 47 C.F.R. §97.9(a) our purpose of each class of operator license in our new structure.**
- **Authorize operator privileges commensurate with our purpose of the license class.**
- **Authorize complete frequency bands to our Learner and Intermediate Classes.**
- **Do not eliminate telegraphy as a requirement for our Amateur Extra Class.**
- **Make our telegraphy skill proof requirement realistic.**

26. This commenter's proposed structure for the 21<sup>st</sup> Century would make it possible for our amateur service community to continue fulfilling its obligations.<sup>38</sup> It would provide to persons interested in radio technique solely with a personal aim and without pecuniary interest a reasonable opportunity for self-training, intercommunication and technical investigations. It would allow us to carry on our proud tradition of serving the public just as our amateur service community has done exceedingly well in the 20<sup>th</sup> Century.<sup>39</sup> It would contribute greatly to the future well being of our amateur service and for maintaining harmony and goodwill within our amateur service community.

Respectfully submitted,

John B. Johnston  
FRN 0003115342  
April 2, 2004

Cc: Booth, Ferret, Imlay & Tipper, and P.C.  
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<sup>38</sup> 47 C.F.R. §97.3(a)(4) of the Commission's Rules states that the amateur service is "A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest."

<sup>39</sup> As of March 27, 2004, there were 726,990 amateur operator license grants.

## APPENDIX

### Summary of this commenter's plan for the 21 Century structure

1. The purposes of our operator classes would be as follows:
    - Our Learner Class provides an opportunity for an operator with minimum technical and operating skills and knowledge to become proficient in operating properly a basic amateur station.
    - Our Intermediate Class provides an opportunity for an operator with the skills and knowledge of the Learner Class to become proficient in operating properly a moderately complex amateur station.
    - Our Amateur Extra Class provides an opportunity for an expert operator to be acknowledged as expert qualified to operate properly a complex high power amateur station under all likely conditions.
  2. Section 97.503 of the Commission's rules, 47CFR §97.503, assigns our VEs the task of verifying that each of our successful examinees possesses the operational and technical qualifications required to perform properly the duties of an amateur service licensee, commensurate with the privileges of the operator class held. Our amateur operator license examinations should be the minimum necessary to verify that the examinee has a working knowledge of our Commission rules and of our good amateur practices, with sufficient understanding of the applicable technology as necessary to ensure that the person has a working knowledge of the meanings of the rules and good amateur practices. From the catalog of operator privileges, from which the qualification standards are derived, those privileges that would best fulfill the purpose of the operator class can be selected. These categories are:
    - a. Special operations, Part 97 Subpart B.
    - b. Emission types, Section 97.3(c).
    - c. Transmitted power standards, Section 97.313.
    - d. Authorized frequency bands, Section 97.310.
- It can be argued that preparing and administering examinations, contained in Part 97 Subpart F, is a fifth category. It is, however, not an operating privilege.
3. There are eleven types of special operations authorized:
    - a. Section 97.201 Auxiliary station.
    - b. Section 97.203 Beacon station.
    - c. Section 97.205 Repeater station.
    - d. Section 97.207 Space station.
    - e. Section 97.209 Earth station.
    - f. Section 97.211 Space telecommand station.
    - g. Section 97.213 Telecommand of an amateur station.
    - h. Section 97.215 Telecommand of model craft.
    - i. Section 97.217 Telemetry.
    - j. Section 97.219 Message forwarding system.
    - k. Section 97.221 Automatically controlled digital station.

This list makes for some very intimidating material for all but an expert. Our purpose for an Intermediate operator can be achieved with about half of the available special operations. Our purpose for the Learner, however, does not comport with engaging in any type of special

operations. Becoming proficient with our general operating standards in Part 97 Subpart B is challenge enough.

4. There are 1,500 types of emission authorized. In §97.3(c), these types have been conveniently grouped under nine terms based on our jargon:

- a. CW.
- b. Data.
- c. Image.
- d. MCW.
- e. Phone.
- f. Pulse.
- g. RTTY.
- h. SS.
- i. Test.

Again, this list makes for some very intimidating material for all but an expert. Our purpose for an Intermediate operator can probably be achieved with about half of the available emission types; just the two fundamental types, Phone and CW, are plenty for a Learner.

5. Our maximum allowable transmitter power standards are authorized in two ways. In §97.13(c), the standards for RF safety are stated in PEP watts input to the antenna. In §97.313, however, the maximum level of 1,500 watts is stated in PEP output from the transmitter. On certain segments of the 80-, 40-, 30- and 15-meter bands, moreover, §97.313(a) limits our stations to 200 watts PEP transmitter power output. Once again, this makes for some very daunting material for all but an expert. In particular, high power privileges create the need to have a working knowledge of our complex RF environmental evaluation requirements in §97.13(c). For an Intermediate Class operator, a moderately complex amateur station should have no more transmitter power than the RF environmental evaluation threshold level specified in Section 97.13(c)(a).<sup>40</sup> For a Learner Class operator, a basic amateur station should have no more than 50 watts transmitter power. These power levels would prevent the station from causing excess human exposure to RF electromagnetic field levels.

6. Our expert Amateur Extra Class is authorized privileges in 21 of the 28 frequency bands authorized in §97.301. They are as follows:

- a. Extremely high frequency (EHF): All 4 bands.
- b. Super-high frequency (SHF): All 4 bands.
- c. Ultra-high frequency (UHF): All 5 bands.
- d. Very-high frequency (VHF): All 4 bands.
- e. High frequency (HF): 4 of 10 bands.
- f. Medium frequency (MF): No band.

Here again, this can make for some very menacing material for all but an expert. Our purpose for the Intermediate Class can probably be achieved with access to about three HF bands (10-, 12- and 15-m), three VHF bands (2-and 6-m) and two UHF bands (33- and 70-cm). For the

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<sup>40</sup> 47 C.F.R. §97.13(c)(1) allows, without an evaluation, a peak-envelope-power input to the antenna in the 15-meter (m) band: 100 watts (w); 12-m band: 75 w; 10- and 6-m bands: 50 w; 70-cm band: 70 w; and 33-cm band: 150 w.

Learner, access to the HF 10- and 12-meter bands and the VHF 2- and 6-meter bands would be appropriate.